CLAIMS

1-21. (Cancelled).

22. (Currently amended) A method of making and curing a POS- or POSS-based composition, ~~first composition selected from the group consisting of silane, siloxane, silsesquioxane, POSS, silicate, and POS, each bearing at least one strained ring olefin, wherein the first composition is a monomer, a polymer, or an oligomer,~~ comprising the steps of:

(a) contacting a base composition selected from the group consisting of POSS and POS with effective amounts of a strained ring olefin in a solution in the presence of effective amounts of a catalyst which promotes addition of the ring-strained olefin to the base composition through an olefinic carbon-carbon double bond of the strained ring olefin, thereby creating a POS- or POSS-based composition with ring-strained olefinic functionality; and

(b) curing the POS- or POSS-based composition with ring-strained olefinic functionality by reacting it ~~reacting the first composition~~ with effective amounts of a mixture of (a) at least one metal-based catalyst selected from the group consisting of carbenes, halides, phosphates, acetates, and salts of molybdenum, tungsten, and ruthenium and (b) at least one cocatalyst selected from the group consisting of organoaluminum halides and aluminum halides.

23. (Previously amended) The method of claim 22, wherein the concentration of the mixture ranges from 0.01 to 1000 millimole per mole of olefin.

24. (Previously amended) The method of claim 23, wherein the concentration of the mixture ranges from 0.1 to 20 millimole per mole of olefin.

25. (Currently amended) A method of making and curing a POS- or POSS-based composition, ~~first composition selected from the group consisting of silane, siloxane, silsesquioxane, POSS, silicate, and POS, each bearing at least one strained ring olefin, wherein the first composition is a monomer, a polymer, or an oligomer,~~ comprising the steps of:

(a) contacting a base composition selected from the group consisting of POSS and POS with effective amounts of a strained ring olefin in a solution in the presence of effective amounts of a catalyst which promotes addition of the ring-strained olefin to the base composition through an olefinic carbon-carbon double bond of the strained ring olefin, thereby creating a POS- or POSS-based composition with ring-strained olefinic functionality; and

(b) curing the POS- or POSS-based composition with ring-strained olefinic functionality by reacting it ~~reacting the first composition~~ with effective amounts of at least one difunctional or polyfunctional silane in the presence of effective amounts of a catalyst selected from the group consisting of palladium halides, platinum halides, palladium-olefin complexes, platinum-olefin complexes, carbon-supported palladium halides, carbon-supported platinum halides, carbon-supported palladium-olefin complexes, and carbon-supported platinum-olefin complexes. ~~and platinum (a) halides, (b) olefin complexes, or (c) carbon-supported versions.~~

26. (Currently amended) A method of making and curing a POS- or POSS-based composition, [first composition selected from the group consisting of silane, siloxane, silsesquioxane, POSS, silicate, and POS, each bearing at least one strained ring olefin, wherein the first composition is a monomer, a polymer, or an oliogomer,] comprising the steps of:

(a) contacting a base composition selected from the group consisting of POSS and POS with effective amounts of a strained ring olefin in a solution in the presence of effective amounts of a catalyst which promotes addition of the ring-strained olefin to the base composition through an olefinic carbon-carbon double bond of the strained ring olefin, thereby creating a POS- or POSS-based composition with ring-strained olefinic functionality; and

(b) curing the POS- or POSS-based composition with ring-strained olefinic functionality by reacting it [reacting the first composition] with effective amounts of a vulcanizing agent selected from the group consisting of organoperoxides, persulfides, and sulfur.

27. (Previously amended) The method of claim 26, wherein the concentration of the vulcanizing agent ranges from 1 to 50 weight %.

28. (Previously amended) The method of claim 26, wherein the concentration of the vulcanizing agent ranges from 2 to 25 weight %.

29-32 (Cancelled).